

# Cognitive Aging and Work: Implications for Organizations and an Aging Workforce

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# Acknowledgements

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# Acknowledgements

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# Overview & Objectives

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- Why is it important to study older workers?
- How is work related to health and well-being among older workers?
- How can we design work to maintain or improve health and well-being for older workers?
- What are some recommendations for future research?

# Why Study Older Workers?

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# Changing workforce demographics

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- The global workforce is aging and the proportion of older workers continues to increase (Schulte et al., 2018; Wheaton & Crimmins, 2013; Zacher et al., 2018).
- 18.2% of the U.S. population age 65+ and 7.9% age 70+ are in the labor force (Bureau of Labor Statistics, 2016)

# Older Average Retirement Age

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- Retirement age is increasing due to many individual, family, work, and macroeconomic factors (Fisher, Chaffee, & Sonnega, 2016).
  - Pension changes
    - Social Security benefit eligibility
    - Shift from defined benefit to defined contribution retirement plans
  - Increased heterogeneity in retirement patterns (Cahill, Quinn, & Giandrea, 2005; 2017; Calvo et al, 2016; Maestas, 2010)
  - Job lock (Benjamin & Pransky, 2008; Fisher et al., 2016; Wilkie et al., 2011)

# Older Adults are a Special Population

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- Older workers have a higher risk for chronic health conditions and functional impairment (Grosch & Pransky, 2009).
  - Affects labor force participation and well-being
- Knowledge gaps (Czaja & Sharit, 2009; Fisher, Ryan, & Sonnega, 2015)
- Implications for work design (Fisher et al., 2017)

# Cognitive Functioning and Work

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# What is Cognitive Functioning?

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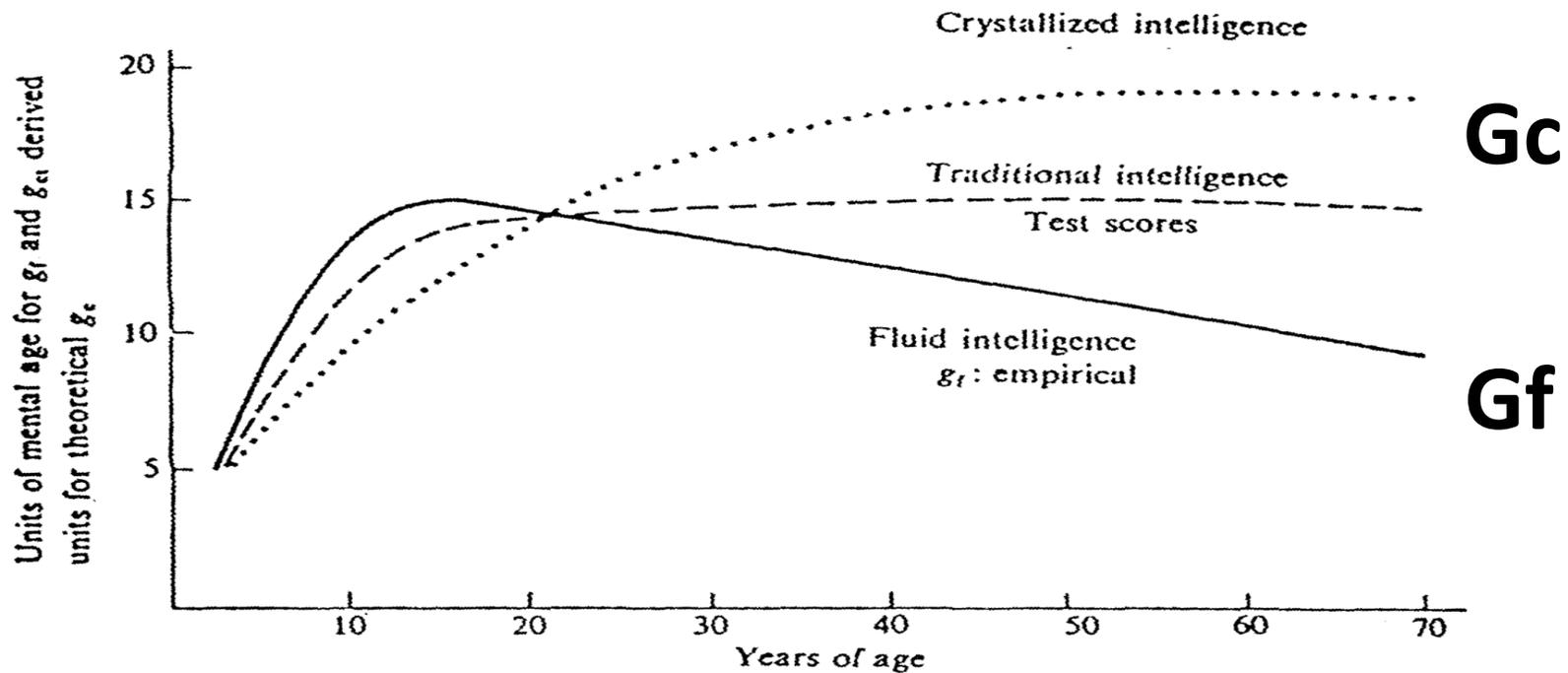
- Comprised of many mental abilities, including reasoning, problem solving, learning, remembering, decision making, and attention.

# Why Study Cognitive Functioning?

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- Necessary for everyday functioning
- Important for successful aging (Rowe & Kahn, 1997)
- It changes over time (Park, 2000; Salthouse, 2012)
- Related to physical health (Clouston et al., 2013)

# Cognitive abilities across the lifespan



# Job Complexity

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- Job complexity refers to the degree to which the jobs people have and tasks they perform on the job are simple or complicated
- How does cognitive job complexity relate to cognitive functioning over time?

# Health and Retirement Study

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# What is the HRS?

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- An ongoing longitudinal study of health, retirement and aging that began in 1992
- Data collected every 2 years; 14 waves completed
- Funded primarily by NIH/NIA (U01 AG009740) with supplemental funding from the U.S. Social Security Administration
- Designed to provide researchers with access to multidisciplinary data from a large, nationally representative sample

# What is the HRS?

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- Nationally representative sample of individuals age 51+ and their spouses regardless of age
- Interviewed face-to-face and by telephone

# HRS Survey Content

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- Demographics
- Health status
- Economic status
- Labor force status, employment history and information
- Retirement plans and behavior
- Pensions
- Family composition

# Theoretical Background

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**Use it or lose it hypothesis** (Salthouse, 1991; 2006)

**Brain or cognitive reserve hypothesis** (Fratiglioni & Wang, 2007; Mortimer & Graves, 1993)

**Environmental mechanisms** (Schooler, 1984, 1990)

# Hypotheses

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Individuals in jobs with *higher mental demands* will have...

- higher levels of cognition
- slower cognitive decline

compared to those in jobs with *less mental work demands*

# Study Methods

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N=4,182 participants in the Health and Retirement Study

- 50% men
- 81% White
- Same type of work for > 10 years ( $M=26.6$  years)

## Measures

- Cognitive functioning: immediate & delayed word recall
- Mental work demands: Occupation-based measure linked from O\*NET
- Covariates: years of education, SES, health, depressive symptoms, practice effects

# Word List Activity

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# Mental work demands: O\*Net

## Work Activities — Mental Processes

What processing, planning, problem-solving, decision-making, and innovating activities are performed with job-relevant information?

**Analyzing Data or Information** — Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.

**Developing Objectives and Strategies** — Establishing long-range objectives and specifying the strategies and actions to achieve them.

**Evaluating Information to Determine Compliance with Standards** — Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.

**Judging the Qualities of Things, Services, or People** — Assessing the value, importance, or quality of things or people.

**Making Decisions and Solving Problems** — Analyzing information and evaluating results to choose the best solution and solve problems.

**Organizing, Planning, and Prioritizing Work** — Developing specific goals and plans to prioritize, organize, and accomplish your work.

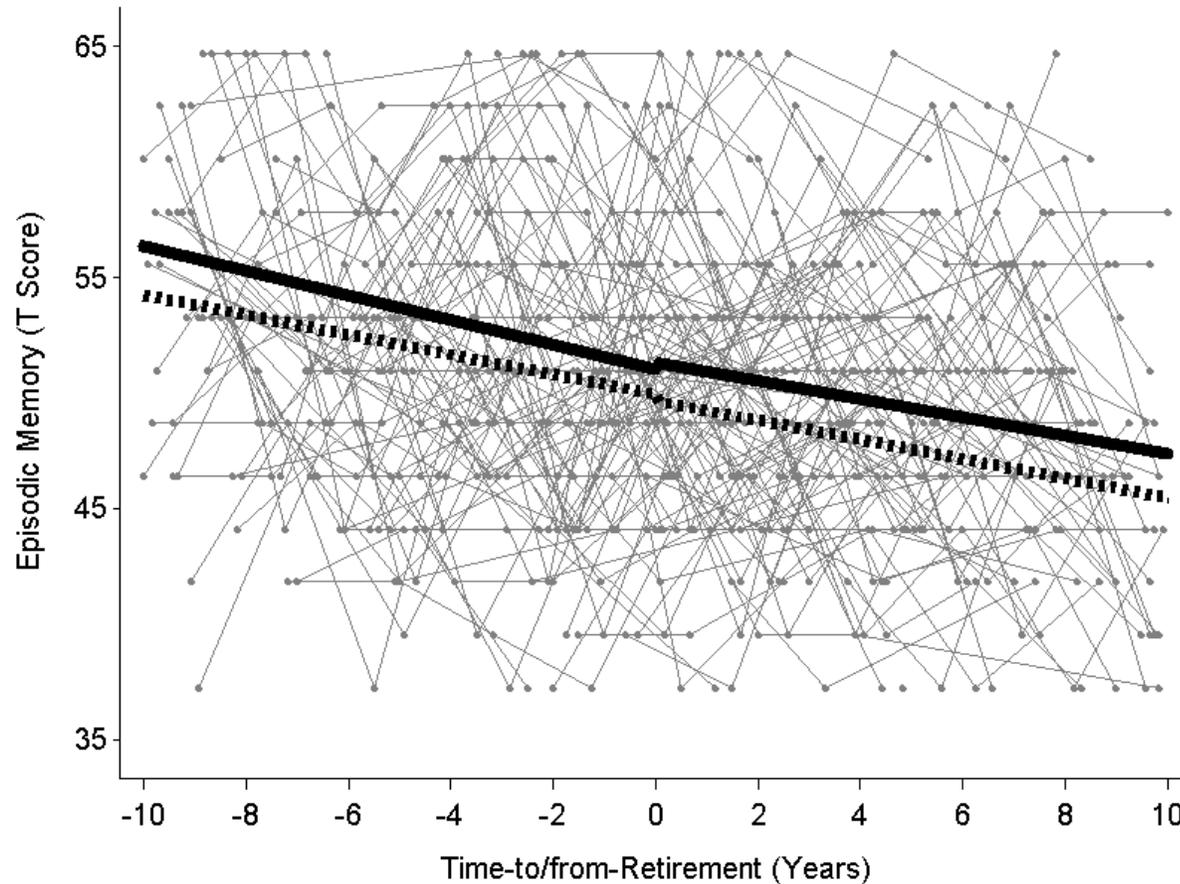
**Processing Information** — Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.

**Scheduling Work and Activities** — Scheduling events, programs, and activities, as well as the work of others.

**Thinking Creatively** — Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions.

**Updating and Using Relevant Knowledge** — Keeping up-to-date technically and applying new knowledge to your job.

# Mental Work Demands & Cognition: Results



Fisher, Stachowski, Infurna,  
Faul, Grosch, & Tetrick (2014)

# Discussion

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- Characteristics of our jobs are related to our cognitive functioning before and after retirement
- Individuals in more cognitively complex jobs perform better on measures of cognitive functioning before and after retirement compared to those in less complex jobs

# Discussion

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- Implications:
  - Work design: increase or maintain job and task complexity
  - Health and well-being at work
  - Job characteristics and work design may help individuals maintain cognitive functioning in later years and post-retirement

# Work Ability

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# Perceived Work Ability

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- Refers to a worker's job-related functional capacity (Ilmarinen, Gould, Järvikoski, & Järvisalo, 2008).
- Important construct for understanding workers' own perceptions that they *can* continue to work.

# Perceived Work Ability

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- Relates positively to worker...
- **Subjective well-being and life satisfaction** (Seitsamo & Ilmarinen, 1997; Sjögren-Rönkä et al., 2002; Tuomi et al., 2001)

# Perceived Work Ability

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- Relates negatively to worker...
  - Absenteeism; long-term sick leave (Ahlstrom et al., 2010; McGonagle et al., 2015)
  - Retirement (Sell et al., 2009)
  - Disability leave (von Bonsdorff et al., 2011)

# Theoretical Background

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- Job Demands Resources Model (Bakker & Demerouti, 2007; Demerouti et al., 2001)



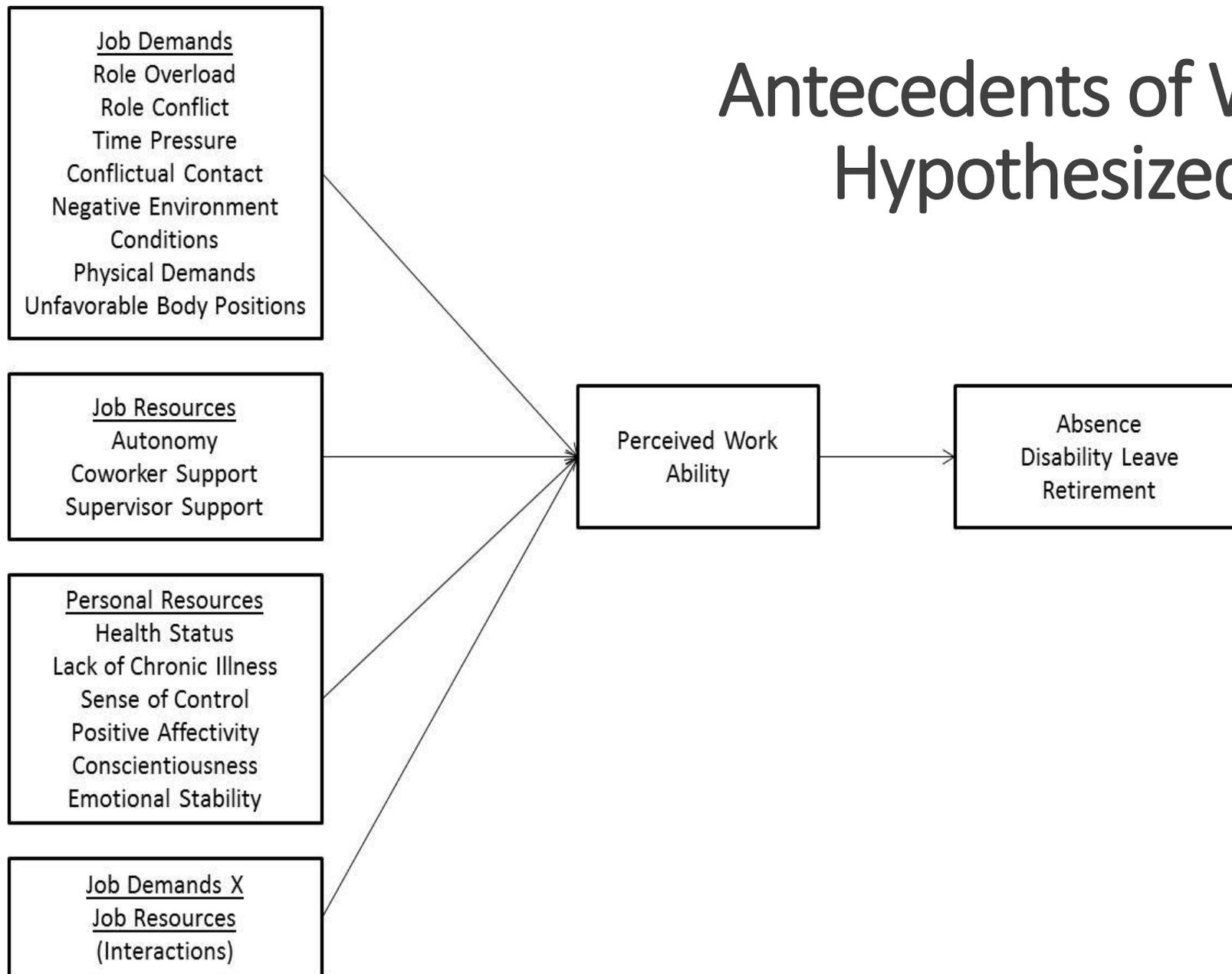
# Theoretical Background

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- Person-Environment Fit (Kristoff-Brown et al., 2005; Feldman & Beehr, 2011)



# Antecedents of Work Ability Hypothesized Model



# Method

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- Three independent samples surveyed across 2-3 occasions up to 4 years apart
- Obtained information about job characteristics from the Occupational Information Network (O\*NET)
  - O\*NET = online database of job information compiled by the U.S. Department of Labor
- Used relative weights analysis

# Participants and Procedure

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## **N = 2335 older workers age 51+**

- Participated in the HRS in 2008 (additional data HRS 2006-2012)
- Completed the psychosocial survey in HRS 2008
- Working for pay in 2008
  
- Age:  $M = 63.8$  years,  $SD = 8.17$
- Gender: 56% Female, 44% Male
- Race: 79.3% White, 15.2% Black
- Ethnicity: 10% Hispanic

**Q47.**

For the following questions, please think about your work on **YOUR CURRENT MAIN JOB**. Assume that your work ability at its best has a value of 10 points. How many points would you give your **CURRENT ABILITY TO WORK**? (0 means that you cannot currently work at all; 10 means your work ability is currently at its lifetime best)

Unable to  
work

(Circle one number.)

Work ability  
at its best

00 01 02 03 04 05 06 07 08 09 10

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Thinking about the ***physical demands*** of your job, how do you rate your current ability to meet those demands?

Unable to  
work

(Circle one number.)

Work ability  
at its best

00 01 02 03 04 05 06 07 08 09 10

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Thinking about the ***mental demands*** of your job, how do you rate your current ability to meet those demands?

Unable to  
work

(Circle one number.)

Work ability  
at its best

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Thinking about the ***interpersonal demands*** of your job, how do you rate your current ability to meet those demands?

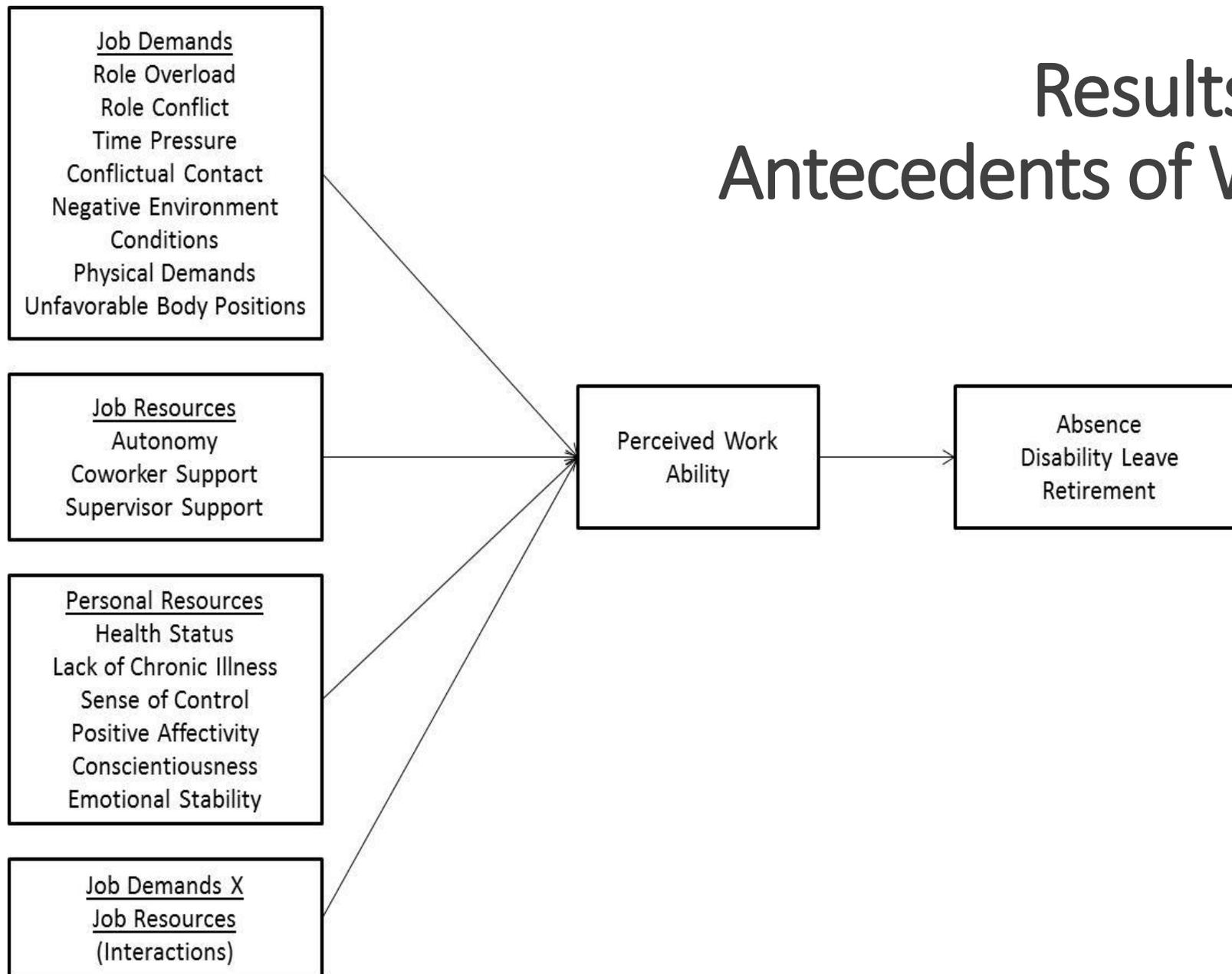
Unable to  
work

(Circle one number.)

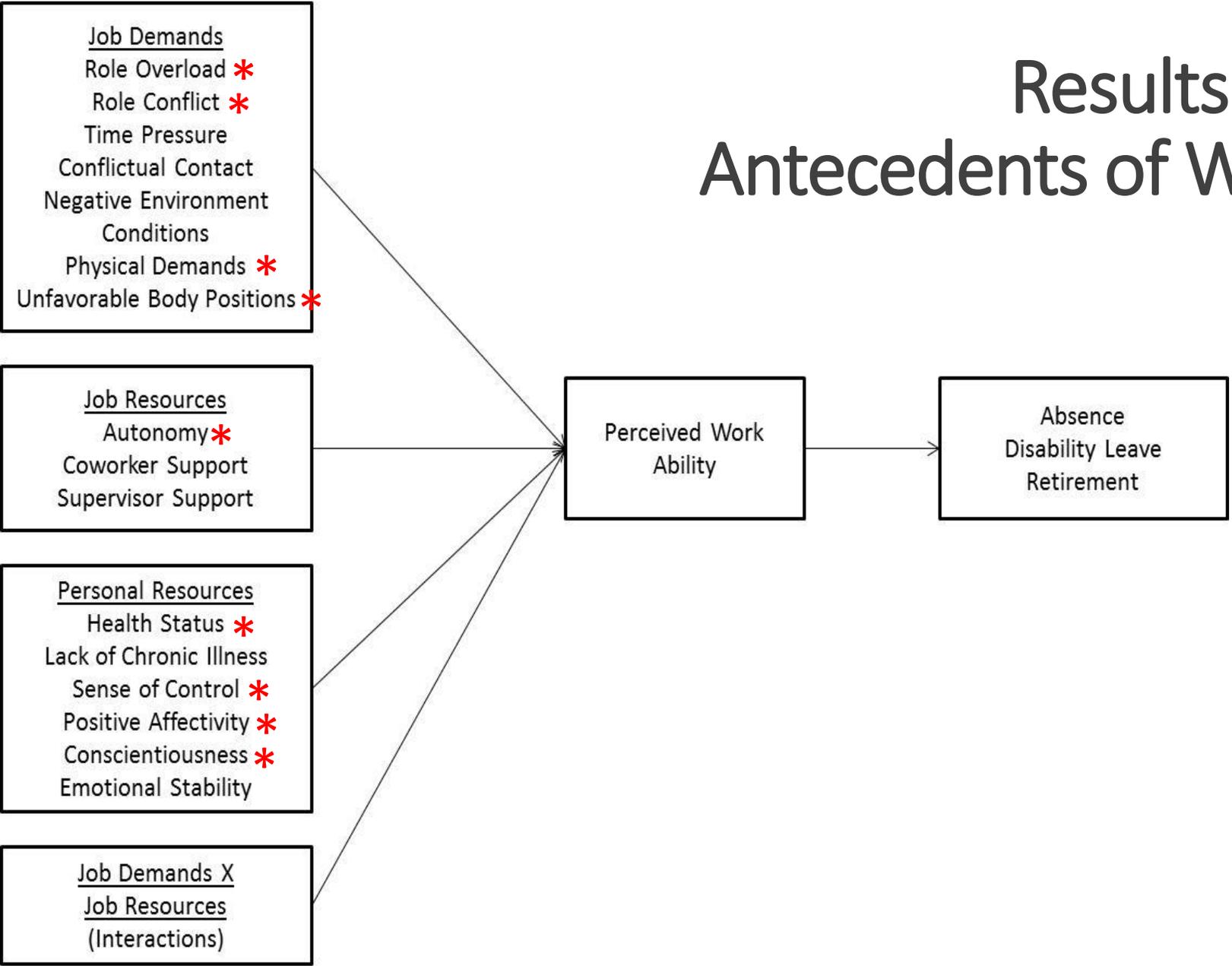
Work ability  
at its best

00 01 02 03 04 05 06 07 08 09 10

# Results: Antecedents of Work Ability



# Results: Antecedents of Work Ability



# Results

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- Personal and job-related characteristics predict perceived work ability (McGonagle et al., 2015)
  - Job resources (e.g., autonomy)
  - Personal resources (e.g., health, personality)
- Additional research is needed to further refine our understanding of personal resources that may impact work ability perceptions.

# Job Demands – Ability Fit

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# Results

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- How do job demands and workers' cognitive abilities relate to retirement and health?

# Theoretical Background

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- Person-Job Fit (Kristof-Brown et al., 2005)
- Person-Environment Fit (Feldman & Beehr, 2011)



# Study Methods

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## Study of Cognition and Aging in the USA

- N = 514 participants age 50+ in national study to validate measures of cognitive functioning

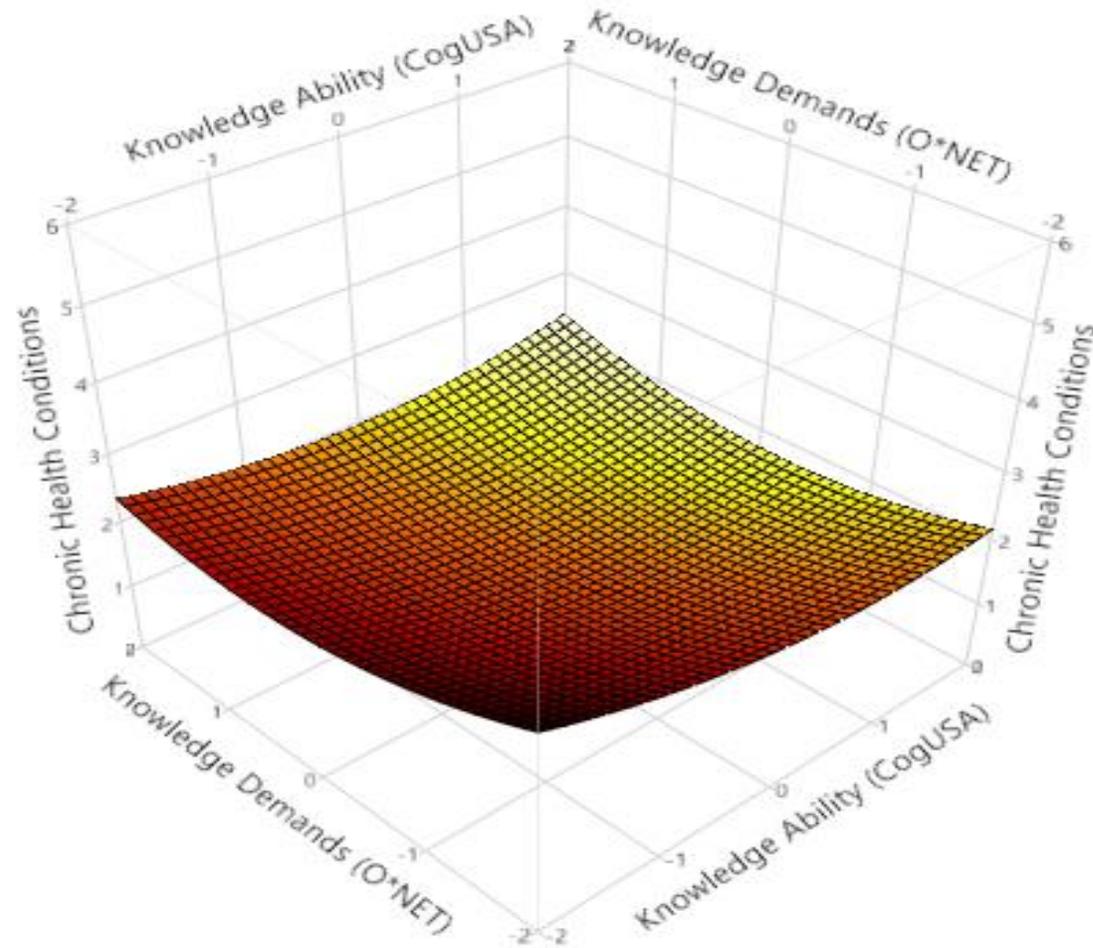
## Measures

- 13 cognitive tests to assess reasoning and knowledge abilities
- Job demands measured by O\*NET
- Self-reported chronic health conditions

# Results

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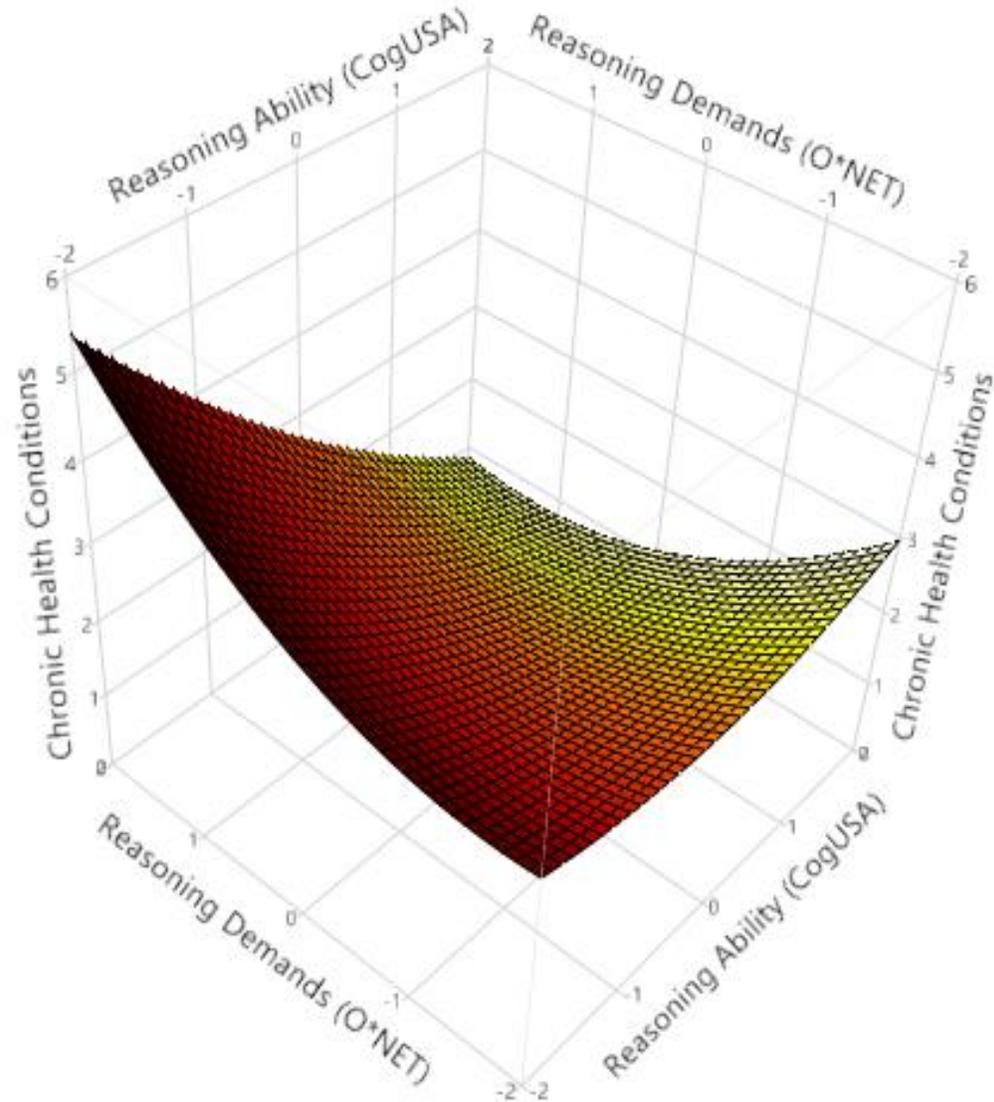
- Knowledge abilities
- Knowledge demands
- Chronic health conditions



# Results

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- Reasoning ability
- Reasoning demands
- Chronic health conditions



# Discussion

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- As the congruence between workers' reasoning abilities and job demands increased, workers reported fewer chronic health conditions
- When reasoning abilities required by a job exceeded worker abilities:
  - Workers reported more health conditions
  - Workers were more likely to be retired versus working

# What are the Consequences of Working for Older Adults?

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# Benefits of Continued Work

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- Economic
- Cognitive Activity
- Well-being
- Social Support
- Identity

Fisher, Ryan, & Sonnega, 2015

# Risks Associated with Continued Work

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- Job lock
- Burnout
- Injuries
- Age discrimination
- Job insecurity and unemployment

Fisher, Ryan, & Sonnega, 2015

# Implications for Worker Health and Well-Being

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# Implications for Work and Workers

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- Job design, job crafting
- Person-job and person-environment fit
- Need for resources to meet or exceed job and task demands
  - Autonomy
  - Support
- Be aware of and recognize changes within workers over time that may affect work ability

# Gaps and Future Research Needs:

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- Develop and evaluate interventions for an age-friendly workplace
- Develop and evaluate interventions to help employees manage work tasks when experiencing cognitive decline
- Investigate how work stress affects cognitive functioning at work

# Gaps and Future Research Needs:

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- What are the consequences of moving to a new job vs. reducing work hours or demands in an existing job for improving worker safety, health, and well-being?
- How can we reduce negative age stereotypes?

# Gaps and Future Research Needs:

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- To what extent is ***job design*** effective for reducing job demands and increasing work ability?
- To what extent is ***job crafting*** effective for reducing job demands and increasing work ability?

# Current and Future Projects – CTWD & CEPAR

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- Work design and cognitive functioning review paper for AMA Annals (Parker, Ward, Fisher, *in progress*)
- Age stereotypes (Petery et al.)
- Work characteristics and well-being
  - cross-national comparisons in U.S. and Australia with data from HRS and HILDA

# Thank you!

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# Questions?



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# Thank you!

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